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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,759	01/18/2007	Alberto De Angelis	296855US0X PCT	5634
22850 7590 10/15/2008 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER VANOY, TIMOTHY C	
			ART UNIT	PAPER NUMBER
			1793	
			NOTIFICATION DATE	DELIVERY MODE
			10/15/2008	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/594,759	<b>Applicant(s)</b> DE ANGELIS ET AL.	
	<b>Examiner</b> TIMOTHY C. VANOY	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 4,5 and 9-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9-29-2006</u> .   | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Specification***

a) The specification is objected to because it lacks a national stage filing reference to PCT/EP2005/02592 in the first sentence to the specification.

### ***Claim Objections***

a) 4 and 9-14 are objected to as being improper multiple dependent claims in as much as they are multiple dependent claims that are dependent on other multiple dependent claims.

b) In claims 4 and 5, "alkanolamine" is misspelled.

c) In claim 5, "substoichiometric" is misspelled.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 4 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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- a) In claim 4, it is not clear what is meant by “dead-sorbed”.
- b) Claim 14 provides for the use of “sulphur”, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 14 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Pat. 2,043,084 to Ward et al.

The Ward patent describes a process for producing sulfur, comprising:

oxidizing part of the hydrogen sulfide into sulphur dioxide (please see pg. 1, col. 2 Ins. 40-45);

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dissolving in water the obtained sulfur dioxide (please see pg. 1, col. 2 Ins. 20-24), and

reacting the hydrogen sulfide and sulfur dioxide in the aqueous solution to produce elemental sulfur, and using the thus-obtained sulfur suspension for the production of sulfur (please see pg. 1, col. 1 Ins. 34-38 and also pg. 1, col. 2 Ins. 13-16).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The person having ordinary skill in the art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 4, 9, 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Pat. 2,043,084 to Ward et al. in view of U. S. Pat. 6,096,280 to Ellenor et al.; U. S. Pat. 5,876,677 to Mensinger et al. and U. S. Pat. 2,724,641 to Butler et al.

The Ward patent describes a process for producing sulfur, comprising:

oxidizing part of the hydrogen sulfide into sulphur dioxide (please see pg. 1, col. 2 Ins. 40-45);

dissolving in water the obtained sulfur dioxide (please see pg. 1, col. 2 Ins. 20-24), and

reacting the hydrogen sulfide and sulfur dioxide in the aqueous solution to produce elemental sulfur, and using the thus-obtained sulfur suspension for the production of sulfur (please see pg. 1, col. 1 Ins. 34-38 and also pg. 1, col. 2 Ins. 13-16), as set forth in Applicants' claims 1, 3 and 9.

The difference between the Applicants' claims and the Ward patent is that Applicants' claim 4 sets forth that the hydrogen sulfide was obtained by absorption in a solution of alkanolamine.

Col. 5 Ins. 19-29 in the Ellenor et al. patent describes a method for abstracting hydrogen sulfide from natural gas by subjecting the natural gas stream to an amine solution to form a hydrogen sulfide-loaded amine solution and a scrubbed natural gas. Afterwards, the hydrogen sulfide is liberated from the amine solution, and then converted into elemental sulfur.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made *to have modified* the process of Ward patent *by subjecting* the hydrogen sulfide-contaminated feed stock to a step of amine scrubbing to scrub out the hydrogen sulfide from the feed stock, as fairly taught in col. 5 Ins. 19-29 in the Ellenor et al. patent and required by at least Applicants' claim 4, *because* col. 5 Ins. 19-29 in the Ellenor et al. patent renders it routine and conventional (and, therefore, obvious) to subject such a hydrogen sulfide-contaminated feed stock to a preliminary step of amine scrubbing.

The difference between the Applicants' claims and this Ward patent is that Applicants' claim 10 sets forth that the resulting sulfur suspension is subjected to ultrasonic radiation.

The abstract of the Mensinger patent sets forth that a mediums containing elemental sulfur are subjected to ultrasonic radiation to prevent "build-up" of elemental sulfur, and frees the surfaces of the absorber from elemental sulfur.

Therefore, it would have been obvious to one or ordinary skill in the art at the time the invention was made *to have modified* the process of the Ward patent *by subjecting* the resulting sulfur suspension to ultrasonic radiation, as set forth in

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Applicants' claim 10 and taught in the abstract of the Mensinger patent, *because* of the taught advantage of eliminating sulfur "build-up" in the sulfur-containing medium, as set forth in the abstract of the Mensinger patent.

The difference between the Applicants' claims and the Ward patent is that Applicants' claim 14 sets forth that the sulfur product is used in the agricultural field.

The Butler patent in col. 2 lns. 59-61 sets forth that the resulting (sulfur) product may be used in the preparation of insecticides, fungicides and fertilizers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made *to have modified* the process of the Ward patent *by using* the product sulfur in the agricultural field, as set forth in at least Applicants' claim 14, *because* col. 2 lns. 59-61 in the Butler patent renders this conventional and obvious.

### ***Allowable Subject Matter***

Claims 5-8 have not been rejected under either 35USC102 or 35USC103 because none of the references of record teach or suggest the direct burning of a mixture of methane and hydrogen sulfide to produce sulfur dioxide. Claims 11-13 have not been rejected under either 35USC102 or 35USC103 because none of the references of record teach or suggest that the sulfur suspension is disposed in a geologic structure.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the



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unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-14 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of copending Application No. 12-160,939. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of both 10-594,759 and 12-160,939 disclose obvious variations of the same method for obtaining elemental sulfur by reacting hydrogen sulfide and sulfur dioxide in water.

The difference between the claims of 10-594,759 and 12-160,939 is that the claims of 10-594,759 disclose that the reaction between the hydrogen sulfide and the sulfur dioxide occurs in “water”, whereas the claims of 12-160,939 disclose that the reaction between the hydrogen sulfide and the sulfur dioxide occurs in “brackish water” or “sea water”, however it is submitted that this difference would have been obvious to one of ordinary skill in the art at the time the invention was made *because* “sea water” is

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a convenient and obvious source of water needed for the reaction when the sulfur plant is located in the near vicinity of a sea or an ocean.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-14 are directed to an invention not patentably distinct from claims 1-12 of commonly assigned 12-160,939 for the reasons set forth in the above obviousness-type double patenting rejection.

The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). Commonly assigned 12-160,939, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), **either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.**

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

***References Made of Record***

The following references from the examiner's search are made of record:

U. S. Pat. 5,753,189 disclosing a method for removing hydrogen sulfide out of natural gas by using an absorber;

U. S. Pat. 5,378,441 disclosing a method for scavenging hydrogen sulfide from natural gas, and

U. S. Pat. 3,104,951 disclosing a method for the oxidation of hydrogen sulfide with an aqueous solution (please see col. 2 Ins. 35-40).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY C. VANOY whose telephone number is (571)272-8158. The examiner can normally be reached on Mon-Fri 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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